July 21, 1936. P. L. IRVING ET AL 2,048,125

SPRINKLER HEAD

Filed Aug. 16, 1933

FIG. 1.

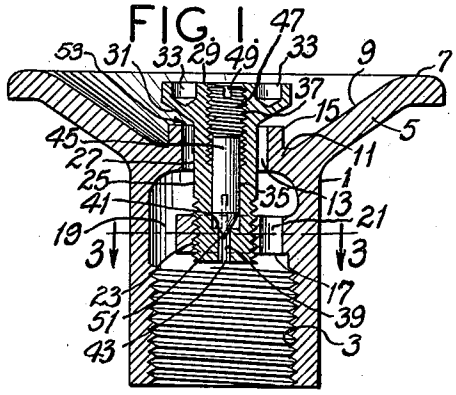


FIG. 4.

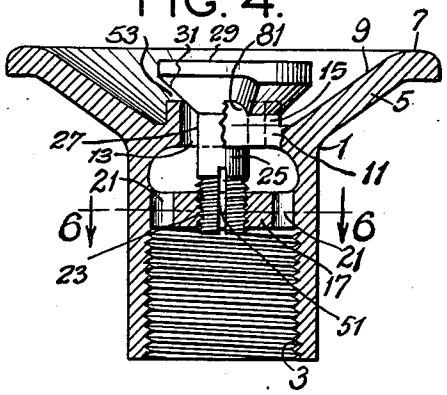


FIG. 2.

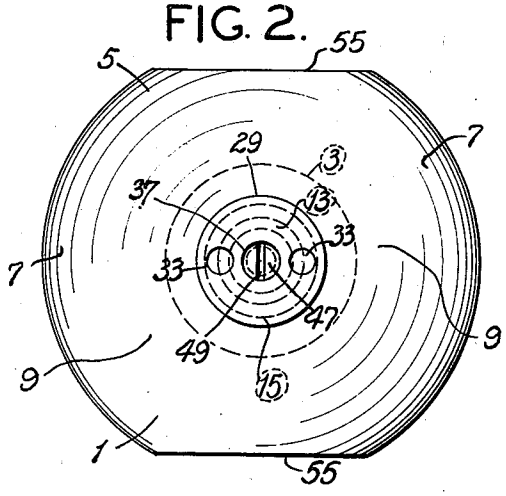


FIG. 5.

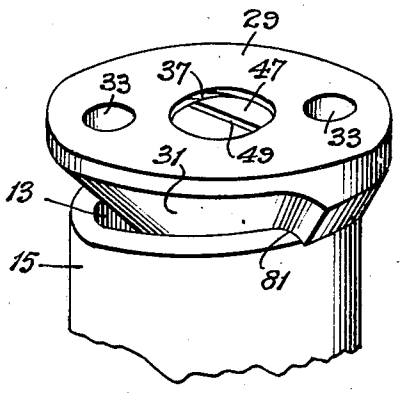


FIG. 3.

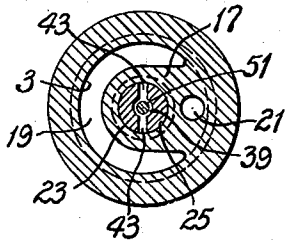
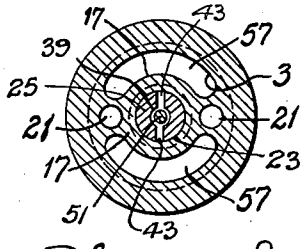


FIG. 6.



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SPRINKLER HEAD

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Application August 16, 1933, Serial No. 685,346

1 Claim. (Cl. 299—60)

This invention relates to sprinkler heads, and with regard to certain more specific features, to sprinkler heads for permanent sprinkler installations.

Among the several objects of the invention may be noted the provision of a sprinkler head of the class described, which is provided with means for securely establishing a volume distribution of the fluid being operated against casual disarrangement and the like; a sprinkler head which is readily adjustable as to the volume of fluid discharged therefrom; a sprinkler head which is adapted for permanent installation, as on lawns and the like, and which when so installed does not protrude objectionably above the surface of the lawn; and the provision of a sprinkler head of the class described which is relatively simple in construction and operation. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structures hereinafter described, and the scope of the application of which will be indicated in the following claim.

In the accompanying drawing, in which are illustrated several of various possible embodiments of the invention,

Fig. 1 is an axial section of a sprinkler head embodying the present invention;

Fig. 2 is a top plan view of the sprinkler head of Fig. 1;

Fig. 3 is a cross-section taken substantially along line 3—3 of Fig. 1;

Fig. 4 is an axial section of an alternative embodiment of the invention;

Fig. 5 is a perspective view of a portion of the embodiment of Fig. 4; and

Fig. 6 is a cross-section taken substantially along line 6—6 of Fig. 4.

Similar reference characters indicate corresponding parts throughout the several views of the drawing.

Referring now more particularly to Fig. 1, numeral 1 indicates a body portion or fitting having a pipe-receiving, interiorly threaded socket portion 3 and an integral flared conical portion 5 at the opposite end thereof. The flared portion 5 terminates in a horizontal flange 7. The portion 5 and flange 7 are arranged to be sunk in a suitable depression in the location of the sprinkler-installation, as, for example, in a lawn, so that the top portion of the flange 7 is substantially on a level with the surface of the earth. As will be seen, the flared portion 5 keeps the grass away from the water stream. Extending across the body 1, at the region of the engagement of the flared portion 5 with cylindrical portion of said body, there is formed an integral web 11, and which has a central opening 13 therein. The web 11 is also provided with an integral upstanding cylindrical flange 15, which makes the opening 13 somewhat longer.

A second web 17 also extends across the body portion, in a position beneath the first web 11. As shown in Fig. 3, the web 17 is in the form of a protrusion from the cylinder wall, and does not extend completely across the opening. However, this is not necessary, and the web may take the formation shown in Fig. 6, in which it will be seen that it extends entirely across the opening. Referring again to Fig. 3, it will be seen that web 17 leaves a crescent-shaped passage 19 through which the fluid is permitted to pass. In order to equalize distribution of the fluid above the web 17, it is desirable that a hole 21 be drilled in the web 17. One or more holes 21 prevent a so-called "dry spot" in the otherwise circular distribution of the water from the head. The web 17 is also provided with a central threaded hole 23, the hole 23 being coaxial with the body 1.

Threaded into the hole 23 is the threaded end of a fluid-directing member 25 (Fig. 1), which has the general shape of a bolt, or machine screw. The member 25 thus has a shank 27 and a head 29. The under side of the head 29 is conical, as indicated at numeral 31, thus overhanging the upper end of the cylindrical flange 15. In order to prevent, to any great extent, any unauthorized tampering with the sprinkler head in a sprinkler installation system, it is desirable that the head 29 be equipped to be adjusted by a spanner wrench, instead of an ordinary screw driver. To this end, the head 29 is provided with openings 33 to receive the prongs of a suitable spanner wrench.

The member 25 is provided with a central bore 35, which is threaded at its upper end 37. The bore 35 does not extend completely to the lower end of the member 25, but is met by a counterbore 39 of reduced diameter. The engagement of the bore 35 and the counterbore 39 provides a shoulder 41. The lower end of the member 25 is slotted, as indicated at numeral 43. As shown, two slots 43 are provided, although this number is only by way of example, and three or more slots might equally well be provided. The slots 43 extend substantially throughout the threaded length of the member 25.

A pin member 45 slides in the central opening 35 of the member 25, and is provided with a threaded head 47 which engages with the threaded region 37 of said bore 35. The head 47 has a slot 49 for the application of a screw driver. The lower end of the pin 45 is pointed, as indicated at numeral 51. The pointed portion 51 engages the shoulder 41 when in operation.

The operation of this embodiment of the invention is as follows:

The member 25 is threaded into the web 17. Spray distribution is regulated by threading the member 25 into or out of the web 17, whereby the annular space indicated by numeral 53, between the upper edge of the flange 15 and the lower conical surface 31 of the member 25, is made wider or narrower. After the member 25 has been threaded into the web 17 to the desired extent, it is locked in position by threading the pin 45 into the central opening 35. By so doing, the head 51 is brought into engagement with the shoulder 41, and because of the conical shape of said head 51, the threaded portion of the member 25 is forced to separate (the slots 43 permitting such separation), and thus clamping the member 25 against the threaded hole in the web 17. By reason of this clamping action, the fluid-directing head 29 is firmly secured in position, and the volume-direction of the spray is permanently regulated.

The arrangement as described is particularly advantageous for permanent lawn sprinkler installations. This is because it is possible, from time to time as the occasion demands, to adjust the character of the spray from the individual sprinkler head without removing the sprinkler head from the piping. All that is needed to effect adjustment is to loosen the pin 45 with a screw driver and then turn the member 25 to the required extent with a spanner wrench. Thereafter, the pin 45 may again be tightened to clamp the member 25 in position.

The flared portion or flanges 5 and 7 of the device over-lay grass and the like which might grow adjacent to the sprinkler head and obstruct what would otherwise be a free flow for the spray.

Flow of water along the head 29 is substantially uniform, so that the volume of fluid sprayed out in any one direction is substantially equal to the volume sprayed in any other direction. The equalized distribution is effected in part through the hole 21 through web 17. It will be understood that the hole 21 need not be a circle, as shown, but may also take such shapes as will permit a greater or less flow of water therethrough.

As indicated in Fig. 2, the flared portion comprising the flanges 5 and 7 are desirably supplied with flats 55 on either side thereof. The flats 55 are adapted to receive a wrench for screwing the sprinkler head into position on the piping system.

In Figures 4, 5, and 6, is shown an alternative embodiment of the invention. The body portion 1 of this embodiment is substantially identical to the body portion 1 of the Fig. 1 embodiment, with the exception that web 17 in this instance extends completely across the cylindrical portion of the body, thus providing (see Fig. 6) two arcuate openings 57 in place of the single crescent opening 19 indicated in Fig. 3. Two fluid-distribution equalizing openings 21 are also provided in the web 17 of this embodiment, for reasons which will be apparent.

In this embodiment, a spray of less than 360 degrees is obtained by making the under side 31 of the head 29 extend lower for a portion of the circumference. The flange 15 seats in a groove 81 in the surface 31 for about 104 degrees, for example, and obstructs the flow for another 38 degrees on either side, so that the spray is forced through the remaining 180 degrees.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

We claim:

A sprinkler head for sub-surface installation comprising a cylindrical body portion, a web forming an integral part of and extending across the upper end of said body portion, a flared flange forming an integral part of and extending upwardly and outwardly from the upper end of said body portion, a water-ejecting central opening in said web including an integral upstanding substantially cylindrical flange, said flared flange and said cylindrical flange forming therebetween a sump for run-back liquid, and water-directing means rigidly, centrally positioned in said opening, including an inverted conical portion which overhangs the upper end of said cylindrical flange, and means for adjusting and locking in position said water-directing means, said last-named means being available for adjustment and locking from above the sprinkler head, without necessitating the application of a tool therebeneath.

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